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United States  
Environmental Protection  
Agency

Office of Public Affairs  
Region 5  
230 South Dearborn Street  
Chicago, Illinois 60604

Illinois Indiana  
Michigan Minnesota  
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T3  
9/91

# OMC Cleanup Begins

## Outboard Marine Corporation/Waukegan Harbor Superfund Site

Waukegan, Illinois

September 1991

This fact sheet tells you about...

- Recent site activities.
- Highlights of the cleanup process.
- Cleanup schedule.
- Sources for additional information.

Availability sessions are informal gatherings that offer the public an opportunity to talk with officials who are knowledgeable about site activities.



### AVAILABILITY SESSIONS

The U.S. Environmental Protection Agency (U.S. EPA) is sponsoring two availability sessions to provide citizens with information about clean-up activities at the Outboard Marine Corporation/Waukegan Harbor Superfund site in Waukegan, Illinois.

#### Date:

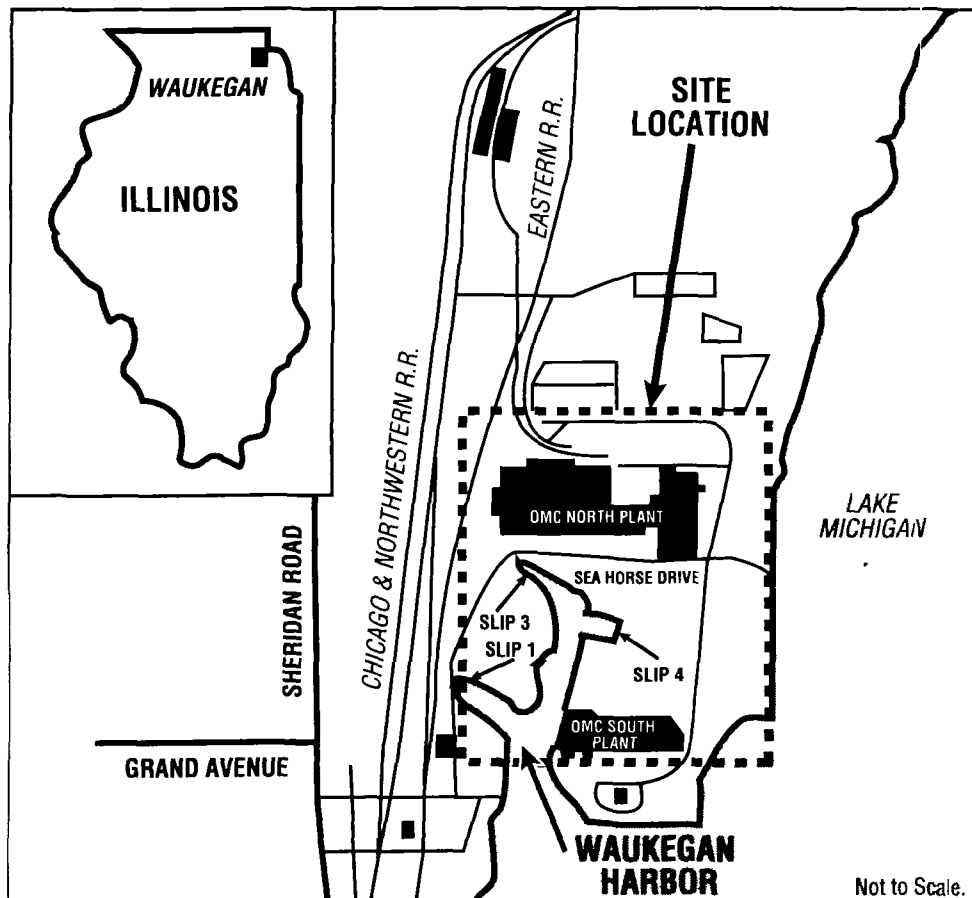
Thursday, September 5, 1991

#### Times:

2-5 p.m. and 7-9 p.m.

#### Location:

East Room/Ramada Inn  
200 North Green Bay Road  
Waukegan, Illinois



## INTRODUCTION

*Cleanup activities are underway at the Outboard Marine Corporation/Waukegan Harbor Superfund site ("OMC/Waukegan Harbor project" or "the site") in Waukegan, Illinois. This fact sheet presents information about the new slip, highlights of the recently completed cleanup design, and the cleanup schedule. It also provides a brief look at the background of the site and sources for additional information.*

## SITE BACKGROUND

The Outboard Marine Corporation (OMC) operates a recreational marine products manufacturing plant near the intersection of Grand Avenue and Sheridan Road on the western shore of Lake Michigan in Waukegan, Illinois. From 1961 until the early 1970s, OMC used a hydraulic fluid containing polychlorinated biphenyls (PCBs) in its operations. In the process of plant cleaning operations, large quantities of PCBs escaped into Waukegan Harbor and onto OMC property. The U.S. EPA estimates that there are over 1 million pounds of



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PCBs at the site (about 700,000 pounds on OMC property and about 300,000 pounds in soil and sediment in Slip 3 and Waukegan Harbor).

In 1984, the U.S. EPA signed a record of decision authorizing site cleanup; however, litigation between OMC and the U.S. EPA suspended implementation of this decision. In 1988, OMC and the U.S. EPA signed a consent decree, which specified the final terms for cleanup.

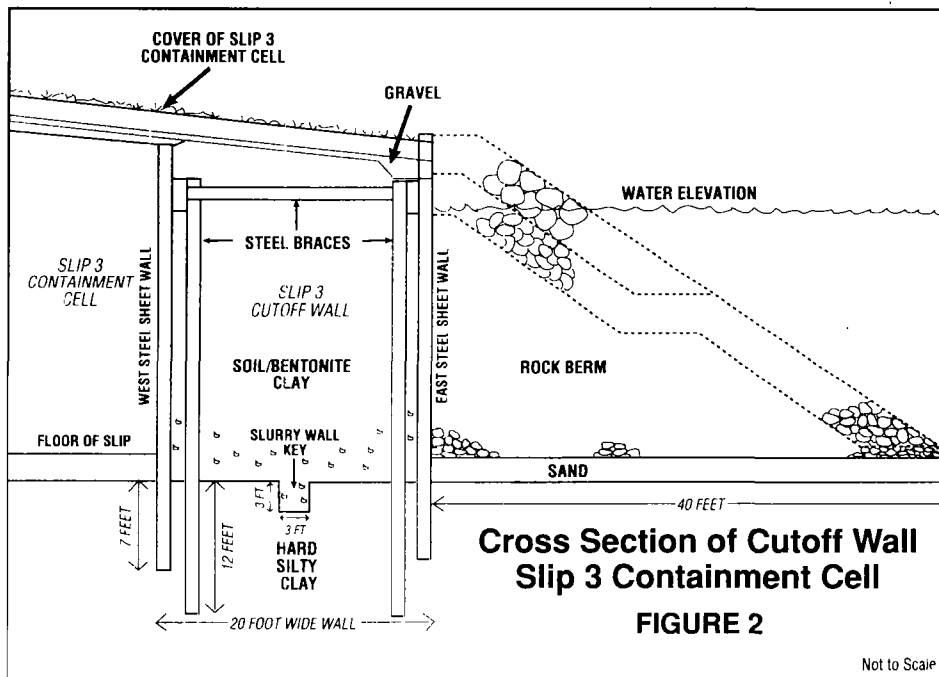
## Construction and Opening of Slip 4

Under the terms of the 1988 consent decree, OMC agreed to construct, as part of cleanup, a new slip on the east side of the Upper Harbor to replace Slip 3. Construction of the new slip, called Slip 4, was delayed when soil contamination, unrelated to the OMC/Waukegan Harbor project, was discovered. This area of contamination is part of a new Superfund investigation referred to as the Waukegan Manufactured Gas and Coke Plant site.

Earlier this year, construction of Slip 4 resumed slightly north of the location originally outlined in the 1988 consent decree. All contaminated material removed in the construction process is stored near the new slip in a secure wastepile. Final disposal of this material will be addressed as part of the upcoming study for the Manufactured Gas and Coke Plant site. Slip 4 officially opened to the public in July 1991.

## Highlights of the Cleanup Process

The Waukegan Harbor Site Trustee hired Canonic Environmental Services Corp. to provide the engineering design and construction services for the OMC/Waukegan Harbor project. Canonic Environmental designed and built Slip 4 and recently completed the design for site cleanup. Key elements of cleanup follow.

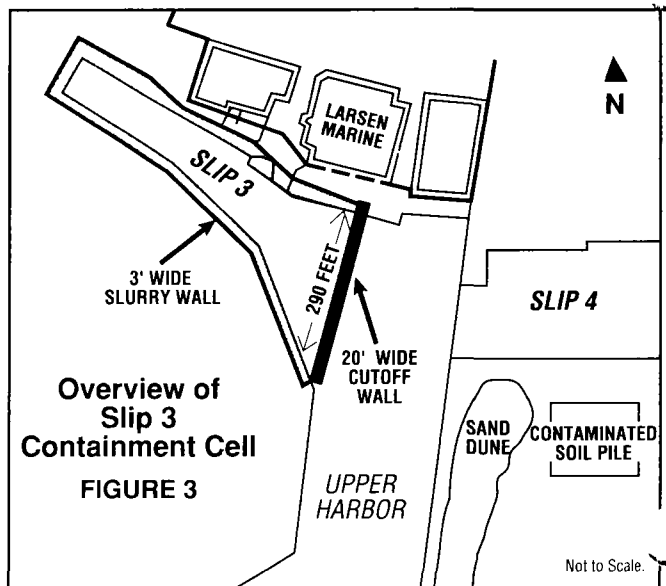


## Slip 3 Containment Cell

Slip 3 will be made into a permanent containment cell. Construction of the cutoff wall at the mouth of the slip is underway. The wall will consist of two steel sheets, placed 20 feet apart, and keyed, or anchored, seven feet deep into the clay layer under the slip floor. Steel braces will be placed every 30 feet along the approximately 290-foot-long wall. These braces will be keyed 12 feet deep into the clay layer (Figure 2).

The cutoff wall will extend approximately 34 feet from top to bottom. The water and sediment trapped between the steel sheets will be placed into Slip 3. The space between the steel sheets will be filled with a type of clay (bentonite) to form a slurry wall. A slurry wall is an underground, or in this case, underwater, barrier of nearly impermeable material.

The cutoff wall will receive additional support on the harbor side from a



rock berm. As shown in Figure 2, the berm, or sloping rock support, will be constructed diagonally to the cutoff wall, extending approximately 40 feet out along the floor of the harbor.

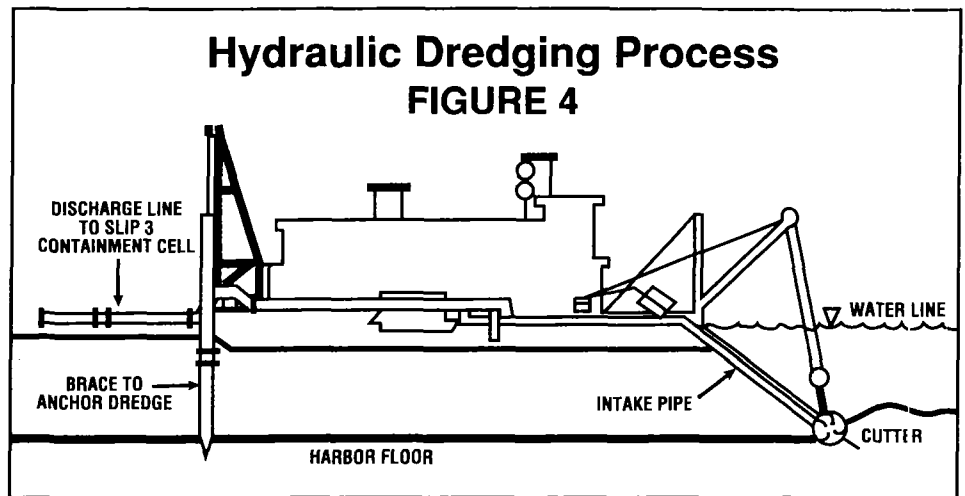
After completion of the cutoff wall, a three-foot-wide slurry wall, connected to the cutoff wall, will be built around the remainder of Slip 3. This protective wall will extend from about three feet above ground to about 25 to 30 feet below the ground's surface. It will be keyed three feet deep into the clay layer. The exact depth of the slurry wall, from top to bottom, will depend on where the clay layer begins.

The three-foot, above-ground section of the Slip 3 slurry wall has a dual purpose. First, it will increase the capacity of the slip's containment cell to accommodate the contaminated sediment dredged from the Upper Harbor; and second, it will serve as a platform for workers during cleanup. When cleanup is completed, the above ground portion of the slurry wall will be pushed into the Slip 3 containment cell. The cell will then be permanently covered with a clay cap. The cap will be covered with soil and vegetation will be planted.

Extraction wells will be installed to keep the water level inside the cell lower than outside the cell. This forces the water to flow into the cell so that it can be pumped and treated.

## Dredging

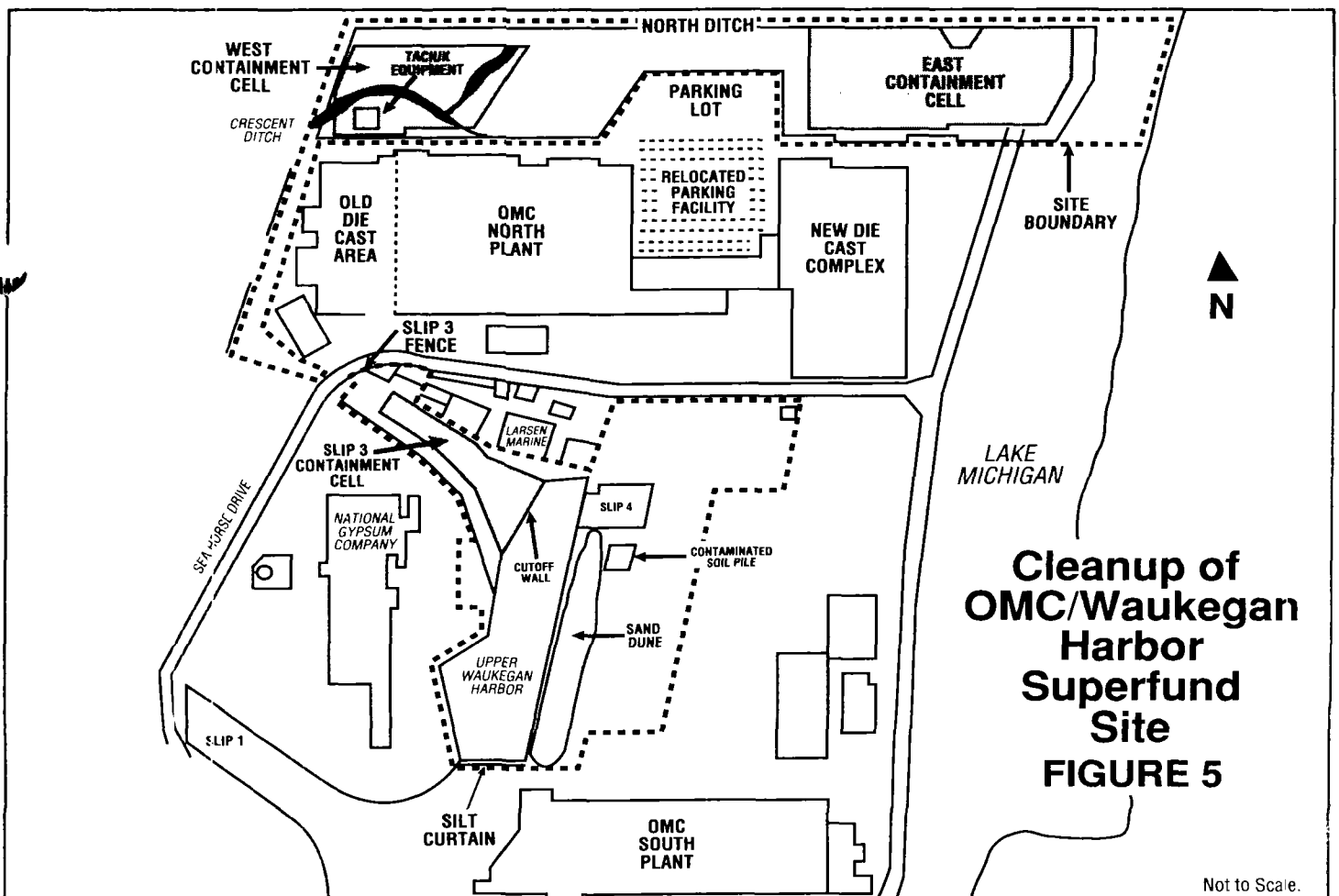
Hydraulic dredging will be used to move contaminated sediment from the Upper Harbor into Slip 3. The



hydraulic dredging process outlined in the design for cleanup will use an apparatus similar to the one shown in Figure 4. A cutter will loosen the sediments on the harbor floor. These sediments will be hydraulically drawn, or pumped, into an intake pipe and discharged into Slip 3, behind the new cutoff wall. The speed of the dredging operation will be determined by the settling rate of the sediments in Slip 3; therefore, dredging will be done slowly. It is

likely that two dredging passes of the harbor will be needed to complete cleanup.

Before dredging begins, silt recuction curtains will be placed at the mouth of the new slip and at the far end of the harbor to reduce sediment movement. Water monitoring will be done to ensure that the silt curtains operate properly.



## **West Containment Cell**

The west containment cell will encompass the Crescent Ditch and Oval Lagoon areas. The cell will be formed by using standard construction techniques to build a three-foot-wide slurry wall, keyed three feet deep into the clay layer, around the cell area. The slurry wall will extend from about three feet above ground (during construction only) to about 25 to 30 feet below the ground's surface. The exact length of the wall, from top to bottom, will vary depending on the depth of the clay layer.

Highly contaminated sediment/soils from Slip 3, the Crescent Ditch, and the Oval Lagoon will be "dewatered" in a temporary pond located in the west containment cell. A dewatering pond is a bermed, or mounded, area with a water collection system. As the water seeps out of contaminated soil and sediment, it will be collected for treatment onsite. After treatment, the water will be discharged to the North Ditch, which empties into Lake Michigan. The "dry" soils and sediment will be treated in the Taciuk process, another aspect of the design for site cleanup.

The west containment cell will receive contaminated sediment from the North Ditch, a small amount of contaminated soil from the east containment cell, and treated sediment from the Taciuk process.

Extraction wells will be installed to keep the water level inside the containment cell lower than outside the cell. This forces the water into the cell so that it can be pumped and treated. At the end of cleanup, the west containment cell will be covered with a clay cap and soil, and planted with vegetation. The extraction well system will be maintained to permanently keep the water level lower inside than outside the cell.

## **East Containment Cell**

The east containment cell encompasses part of the parking lot area and land to the east of the lot (Figure 4). Like the west cell, the east cell will be formed by using standard construction techniques to build a three-foot-wide slurry wall, keyed three feet deep into the clay layer, around the perimeter of the cell. This wall will extend from about three feet above ground (during construction only) to about 25 to 30 feet below the ground's surface. The exact length of the wall, from top to bottom, will vary depending on the depth of the clay layer.

Unlike the west cell, the east cell will not accept contaminated soil or sediment from any other location at the site. Extraction wells will be installed to keep the water level inside the containment cell lower than outside the cell. As with the other containment cells, the extraction well system will force the water to flow into the cell so it can be pumped and treated.

The cell will be covered with a clay cap and part of it will be used as a parking lot.

## **Taciuk Process**

The Taciuk process is the thermal treatment system that will be used to separate PCBs from soils and sediments. It will take place in a single enclosed unit called an anaerobic thermal processor (ATP) in an area within the west containment cell.

The ATP will separate PCBs from the soils and sediment by vaporizing them at a temperature around 1100 F. When the vapor is cooled, the PCBs will condense into a liquid that will be destroyed at an off-site facility.

At the end of the Taciuk process, 97 percent of the PCBs will be removed from the treated sediment. The treated sediment will then be disposed of in the west containment cell. Air

emissions will be monitored at the Taciuk operation and site borders.

The Taciuk process has been used at one other Superfund site to remove low levels of PCB contamination from soil. This is the first time it will be used to remove PCBs in sediment.

## **Water Treatment Facilities**

Four on-site water treatment facilities are planned for the OMC/Waukegan Harbor project. Three will be temporary facilities to treat water associated with cleanup; one will be a long-term facility to treat any water extracted from the three containment cells after cleanup is completed.

Water treatment at all facilities will basically use a sand filtration system. In this system, contaminated water is filtered, sometimes under pressure, through sand. PCBs cling to particles in the water. During treatment, the PCB-contaminated particles will be trapped by the sand filter, collected, and placed in the Slip 3 or west containment cells.

The cleanup design calls for the use of a carbon adsorption system, in addition to the sand filtration system, to treat some of the water at the site. For additional information about the design of the water treatment systems/facilities, please refer to the final design report available at the site information repository at the Waukegan Public Library.

TASK	1991	1992	1993
	J A S O N D	J F M A M J J A S O N D	J F M A M J
• Construction of Slip 3 Containment Cell (Without Cap) and Soil Removal from Slip 3	██████████		
• Construction of Water Treatment Facilities	██████████		
• Construction of West Containment Cell (Without Cap)	██████████		
• Dredge Upper Harbor		██████████	██████████
• Complete and Submit Taciuk Pilot Test		██████████	
• Excavation of Select Soil from North Property Grounds and Taciuk Treatment		██████████	
• Excavation of North Ditch			██████████
• Construction and Closure of the East Containment Cell			██████████
• Closure of the West Containment Cell			██████████
• Closure of the Slip 3 Cell			██████████

## PROJECTED CLEANUP SCHEDULE

Construction of the cutoff wall for Slip 3 began this summer. Preliminary construction activities, such as hooking up utility lines, are underway near the areas for the east and west containment cells.

Dredging of the Upper Harbor is scheduled to begin on November 1, 1991. Construction of some of the key elements of the design outlined earlier (slurry walls for the Slip 3 and west containment cells, the dewatering pond, and two water treatment facilities) must be completed before dredging can take place. Also, highly

contaminated sediment and soils from Slip 3 must be transported to the west containment cell before the Upper Harbor dredging begins.

As water accumulates in Slip 3 during the dredging process, it will be gradually and steadily pumped out to accommodate additional dredge material. The sediment settling process, with the accompanying pumping and treatment of water from the Slip 3 containment cell, will continue throughout the dredging period. Additional water pumping and treatment will occur after dredging as the

consolidation of the sediments in Slip 3 progresses.

*Cleanup design requirements contain health and safety measures to protect public health and the environment during cleanup. Such measures include frequent air sampling to monitor for any releases that would adversely affect the health and safety of site workers or the nearby community. In addition, all Taciuk emissions, water treatment processes, and dredging activities will be monitored. Fences will be used to restrict public access to the site during cleanup.*

### MAILING LIST ADDITIONS / CORRECTIONS

To make a correction or to be added to the **OMC/Waukegan Harbor site** mailing list, please fill out and mail this form to :

John Perrecone  
Office of Public Affairs, 5PA-14  
U.S. EPA Region 5  
230 S. Dearborn  
Chicago, Illinois 60604  
(312) 353-1149

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Affiliation: \_\_\_\_\_

## SOURCES FOR ADDITIONAL INFORMATION



### INFORMATION REPOSITORY

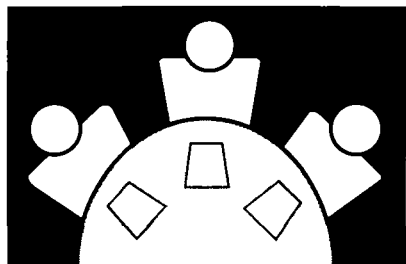
Anyone interested in more information about the OMC/Waukegan Harbor project is encouraged to review the final design report and other site documents available at the site information repository:

**Waukegan Public Library**

128 North County  
Waukegan, Illinois  
or  
contact

**John Perrecone**

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### AVAILABILITY SESSIONS

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